

PROCEEDINGS
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NEW GENERA AND SPECIES OF PERLIDAE.

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I have had in my hands for study for a long time a single adult specimen of a peculiar stone-fly from Ithaca, N. Y., and a number of larvae from the same locality. The imago was taken at light by Professor R. H. Pettitt in June, 1891, and the larvae were collected by Mr. G. H. Jensen in 1898. Some years ago, in working up a key to our genera of stoneflies, Professor Comstock recognized that the adult represents a new genus, and so indicated, on a label in the collection, without applying a name. Recently, in working on a monograph of our North American stoneflies for a New York State Museum bulletin, I have studied its characters. In both larval and adult stages it is one of the best marked of our genera. I describe it below, reserving more complete description and figures for the forthcoming bulletin.

Peltoperla gen. nov.

Type.—*Peltoperla arcuata* sp. nov.

Ocelli two; prothorax wider than the head, which it partly covers, and with broadly flaring margins at the sides as well as in front. The segments of the palpi increase in length to the tip; tarsi, with the two basal joints very short, and the third joint very long. Subcosta conjoined with the radius before the cross-vein at the stigma; apical costal area with numerous cross-veins; radial sector with several branches beyond the cross-vein at the

stigma. The branches of vein Cu_1 in the fore wing are attached to its anterior side.

The larvae, found among dead leaves in a spring-fed brook, are of very unusual appearance; short and thick, with unusually short and close-ringed antennae and setae; thorax highly and smoothly arched, its thin and flaring margins overlapping the very few and very thick, single gill filaments.

***Peltoperla arcuata* sp. nov.**

Length of body, 10 mm.; length to wing tips, 18 mm.; expanse of wings, 34 mm.

A long winged perlid with short and flat body; head distinctly narrower than the prothorax, and retracted under its front margin. The two ocelli equidistant from each other and from the eyes; antennae long and slenderly tapering, pale brown; disc yellowish, minutely pilose.

Prothoracic disc with its thin, projecting edges slightly upturned before and behind, its front margin straight, its hind margin very convex, its front angles very slightly and its hind angles very broadly rounded, and its sides parallel. Color pale brown, yellowish around the hind margin and along the middle line; there are a few broad, irregular and indistinct corrugations upon the disc.

Mesothorax pale brown. Wings nearly uniform brownish hyaline, the veins slightly darker; legs pale yellowish brown slightly darker at the joints; their bases separated by very broad sterna. The metathoracic sternum broadly overlaps the first abdominal segment and is emarginate in the middle of its hind margin.

Abdomen yellowish, each segment with an obscure brown basal band on the dorsal side, continued below on segments 8 and 9; segment 10 yellow; setae yellow, short, hairy, hardly longer than segments 9 and 10 together and greatly surpassed by the wing tips. The sternum of the 8th segment (female) is produced backward nearly to the tip of the 9th segment in a very broadly rounded lobe.

The genus *Perlinella* (type *Perla elongata* Walsh=*Perla trivittata* Banks) is somewhat like *Peltoperla* in the distribution of branches on the cubital vein.

***Neoperla* nom. nov.**

Type.—*Perla occipitalis* Pictet.

Replacing *Pseudoperla* Banks, Trans. Amer. Ent. Soc., vol. 19, p. 342, preoccupied by Pictet in Orthoptera.

A number of specimens of both sexes of the little known *Perla cyrene* Newman from New Zealand, kindly sent me by Messrs. G. Howes, of Dunedin, and G. V. Hudson, of Wellington, and by Mr. Arthur M. Lea, of Hobart, Tasmania, have enabled me to study this interesting species. Mr. Hudson, in his ex-

cellent little book, "The Neuroptera of New Zealand," has expressed the opinion that this species has little affinity with the others with which it has been hitherto associated. That opinion my study of its structure abundantly confirms. It should constitute another peculiar antipodean genus, which I herewith briefly characterize.

Austroperla gen. nov.

Type.—*Perla cyrene* Newman.

Ocelli three, the median one minute; palpi short, with thickened terminal joint; mandible with a well developed internal molar surface and strong end teeth; tarsi with middle joint very short, but with the first joint more than half as long as the third (as in *Eusthenia*).

Subcosta conjoined with radius beyond the crossvein of the stigma; crossveins in the apical costal area few, in the subapical, more numerous; radial sector 2-3 branched beyond the crossvein at the stigma. The median vein in the fore wing is very much curved, exaggerating in its middle portion the basal curvature of the radial sector; and the branches of vein Cu_1 are attached upon its anterior side; crossveins regular.

Among some interesting Perlidae sent me by Mr. S. I. Kuwana from the collection of Baron Takachico of Hikosan, Buzen, island of Kiushiu, Japan, were nearly all the described Japanese species, and the three following new ones:

Perla tennina sp. nov.

Length of body, 15 mm.; to wing tips, 20 mm.; antenna, 10 mm.; expanse of wings, 34 mm.

Color blackish brown, marked with dull yellow. Head hardly wider than the prothorax, the three ocelli minute, distant; disc blackish, with a triradiate mark starting forward from the hind margin, the median ray dilated and truncated anteriorly, the lateral rays slender, extending just outside the lateral ocelli; antennae and palpi wholly blackish.

Prothorax slightly wider than long, its fore and hind margins slightly convex, its sides straight and parallel, and its angles all right angles. A broad and uniform band of clear yellow lies upon the middle of the disc, which is otherwise wholly blackish brown with shining embossed markings at the sides of the yellow band. Metathorax with narrower median line, and with blotches on the wing bases.

The wings are smoky brown with blackish veins except on the costal margin where they are paler. Legs blackish brown beyond the base; all femora and tibiae are paler on the inner side beyond the basal fifth of each, and the tibiae are laterally sulcate.

Abdomen blackish, with rather short setae that do not surpass the wing tips, and that are clad with tawny pubescence. The 8th ventral segment of the female is prolonged posteriorly in a broad almost sacculately-inflated lamina which covers the 9th segment, and whose margin is upcurved and obtusely rounded.

A single female specimen: Hikosan, Buzen, Japan, 28 Apr., 1902.

***Nemoura japonica* sp. nov.**

Length to wing tips, 10.5 to 11.5 mm.; antennae, 9 mm.; expanse of wings, 22 mm.

Color nearly uniform blackish, including the antennae, the antennal sclerite, basal segments of palpi, and bases of femora and all of coxae, somewhat paler. Antennae finely and uniformly pubescent, about 40-jointed; three terminal segments of the maxillary palpi of equal length.

The prothorax is distinctly wider than long, broadly rounded at the sides, slightly rounded in front, straight or slightly concave behind, with all its angles very obtuse.

The wings are dusky hyaline, with a faint cloud extending backward from the stigma.

Two specimens, apparently male and female (in both the abdomen is greatly contracted and bent upon itself), from Hikosan, Buzen, Japan, collected on the 23d of April, 1902.

***Taeniopteryx tenuis* sp. nov.**

Length to tip of wings, 12 to 13 mm.; antennae, 11 mm. additional; expanse of wings, 24 mm.

Color brownish, paler beneath and on all appendages. Head rufous above and on the enlarged basal segment of the antenna. The transverse occipital margin is somewhat tumid, and is marked with fine longitudinal scars; palpi fuscous.

Prothorax quadrangular, slightly wider than long, and slightly widened posteriorly, with obtuse angles.

Wings narrow and long, smoky hyaline, with an obscure white mark just before the radio-medial crossvein, between the subcostal and cubital veins, and a smaller mark beyond this crossvein. Legs pale, clad with close brown pubescence, sutures, and tips of tarsi, darker; first and second tarsal segments of equal length, the third segment one-fourth longer.

Abdomen cylindric; 9th segment of the male elongated and upcurved in a large spoon-shaped plate which extends beyond the tip of the abdomen by the length of several segments, and is yellow, clothed externally with brown pubescence; from within its apex arises an erect appendage, shaped like a bird's head with the beak extending forward above the terminal abdominal segments in a long triangular point.